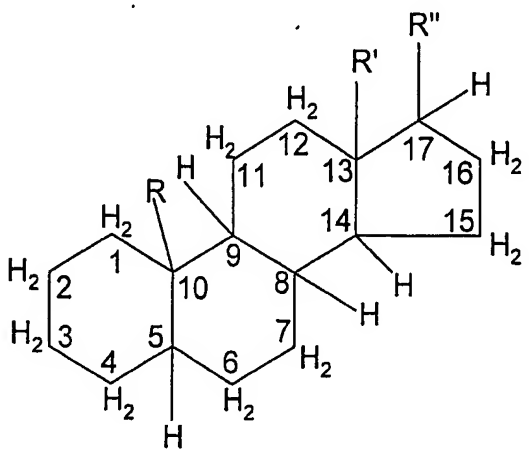
CLAIMS

1. Nitrooxy derivatives of steroidal compounds of general formula

$$B - X_1 - NO_2 \quad (I)$$

or esters or salts thereof, wherein:

B is a steroidal radical having the following structure:

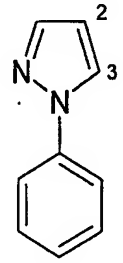


(IA)

wherein at the place of the hydrogen of the CH group, or of the two hydrogens of the CH_2 group indicated in the general formula, there can be the following substituents:

in position 1-2: a double bond;

in position 2-3 the following substituent:



(IA-1);

in position 2: Cl, Br;

in position 3: oxo, $-O-CH_2-CH_2-Cl$, OH, OCH_3;

in position 4-5: a double bond;

in position 5-6: a double bond;

in position 6: Cl, F, Br, CH_3, -CHO;

the ring defined by the carbon atoms numbered 1, 2, 3, 4, 5, and 10 is an aromatic ring when B is the residue of an estrogen;

in position 7: Cl, OH;

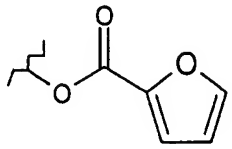
in position 9: Cl, F, Br;

in position 11: OH, oxo, Cl;

in position 16: CH_3, OH, $=CH_2$;

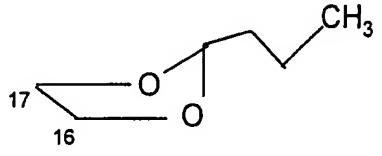
in position 17: OH, CH_3, $OCO(O)_{ua}(CH_2)_{va}CH_3$ wherein ua is an integer equal to 0 or 1, va is an integer from 0 to 4, ethynyl (C≡CH);

or

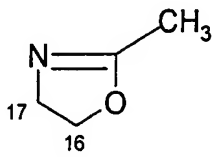


(IA-2)

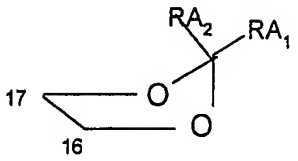
in position 16-17 the following groups:



(IA-3)



(IA-4)



(IA-5)

wherein RA_1 is H, CH_3; RA_2 is C_1-C_{10} linear o branched alkyl chain, preferably C_1-C_3, still more preferably CH_3, or a saturated cycloaliphatic ring having 5-6 carbon atoms or an aromatic ring optionally substituted in para position with $N(R_{1c})_2$ wherein R_{1c} is a C_1-C_{10} , preferably C_1-C_4, linear or branched alkyl; R and R', equal to or different from each other, can be hydrogen or C_1-C_4 linear or branched alkyls, preferably R = R' = CH_3 or R = R' = H;

preferably B is a corticosteroid residue;

R" in position 17 is a bivalent radical having one of the following meanings:

IB) $-(CO-L)_t-(X_O)_{t1}-$, wherein t = 1 and t1 is 0 or 1, preferably 0;

IC) $-L-(X_O)_{t1}-$, wherein t1 is 0 or 1, preferably 1;

the bivalent linking group L has the following meaning:

$(CR_4R_5)_{na}(O)_{nb}(CR_{4'}R_{5'})_{n'a}(CO)_{n'b}(O)_{n''b}(CO)_{n'''b}(CR_{4''}R_{5''})_{n''a}$

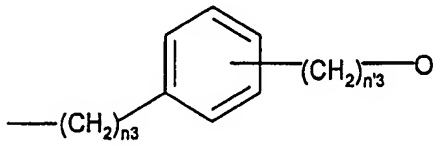
wherein na, n'a, and n''a, equal to or different from each other, are integers from 0 to 6, preferably 1-3; nb, n'b, n''b and n'''b, equal to or different from each other, are integers equal to 0 or 1; R_4, R_5, $R_{4'}$, $R_{5'}$, $R_{4''}$, $R_{5''}$, equal to or different from each other, are selected from H, C_1-C_5, preferably C_1-C_3, linear or branched alkyl;

X_o = -O-, -NH-, $-NR_{1c}$ - wherein R_{1c} is as above defined;

the bond between the steroid and the linking group X_1 is of ester or amidic type;

X_1 is a bivalent linking group selected from the following:

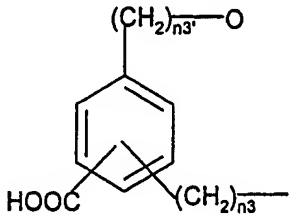
- Y_{AR1} :



(V)

wherein n3 is an integer from 0 to 5 and n3' is an integer from 1 to 3;

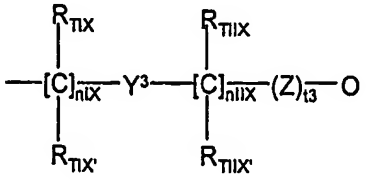
- Y_{AR2} :



(VI)

wherein n3 and n3' have the above meaning.

- Y_p :



(III)

wherein:

nIX is an integer from 0 to 10, preferably 1-3;

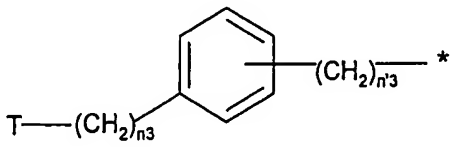
nIIX is an integer from 1 to 10, preferably 1-5;

R_{TIX}, $R_{TIX'}$, R_{TIIX}, $R_{TIIX'}$, equal to or different from each other are H or C_1-C_4 linear or branched alkyl; preferably R_{TIX}, $R_{TIX'}$, R_{TIIX}, $R_{TIIX'}$ are H;

Y^3 is a saturated, unsaturated or aromatic heterocyclic ring, having 5 or 6 atoms, containing from one to three heteroatoms, preferably from one to two, said heteroatoms being equal or different and selected from nitrogen, oxygen, sulphur, preferably nitrogen;

t3 is zero or 1;

Z has the following meaning:



(VI)

wherein:

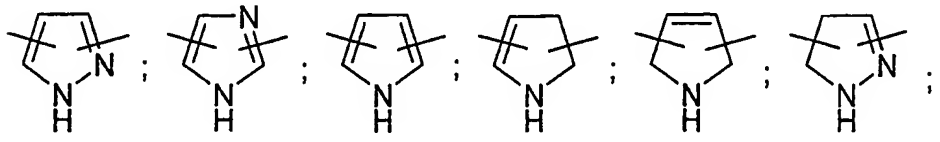
* shows the position of the ONO_2 group;

T has the following meanings:

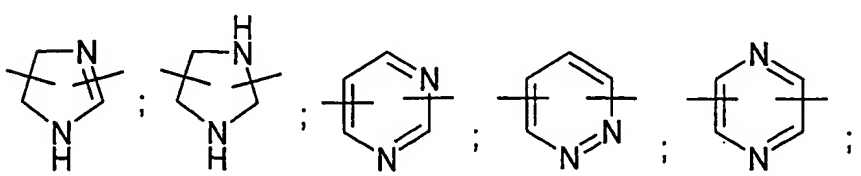
- $-COX_3-$, $-X_3CO-$, wherein X_3 = S or X_o as above defined;
- $-X_3-$ as above defined;

n3 and n'3' are as above defined.

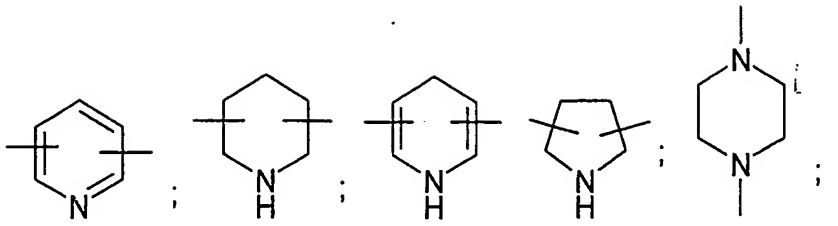
2. Compounds according to claim 1, wherein Y^3 is selected from the following bivalent radicals:



(Y1) (Y2) (Y3) (Y4) (Y5) (Y6)



(Y7) (Y8) (Y9) (Y10) (Y11)



(Y12) (Y13) (Y14) (Y15) (Y16)

3. Compounds according to claim 2, wherein Y^3 is selected from the following: (Y12), having the two free valences in the ortho positions with respect to the nitrogen atom; (Y16) with the two valences linked to the two heteroatoms, (Y1) (pyrazol) 3,5-disubstituted; (Y16) is particularly preferred.

4. Compounds according to claims 1-3, wherein the precursor of B is selected from the following: Budesonide, Hydrocortisone, Alclomethasone, Algestone, Beclomethasone, Betamethasone, Chloroprednisone, Ciclesonide, Clobetasol, Clobetasone, Clocortolone, Cloprednol, Cortisone, Corticosterone, Deflazacort, Desonide, Desoximethasone, Dexamethasone, Dexamethasone 17-furoate, Diflorasone Diflucortolone, Difluprednate, Fluazacort, Flucloronide, Flumethasone, Flunisolide, Fluocinolone Acetonide, Fluocinonide, Fluocortyn Butyl, Fluocortolone, Fluorometholone, Fluperolone Acetate, Fluprednidene Acetate, Fluprednisolone, Flurandrenolide, Formocortal, Halcinonide, Halobetasol Propionate, Halomethasone, Halopredone Acetate, Hydrocortamate, Itrocinonide, Loteprednol Etabonate, Meclonisone, Medrysone, Meprednisone, Methylprednisolone, Momethasone Furoate, Paramethasone, Prednicarbate, Prednisolone, Prednisolone 25-Diethylaminoacetate, Prednisolone Sodium Phosphate, Prednisone, Prednival, Prednylidene, Rofleponide Rimexolone, Triamcinolone, 21-Acetoxypregnenolone, Cortivazol, Amcinonide, Fluticasone Propionate, Mazipredone, Taucorten, Tixocortol, Triamcinolone Hexacetonide; Ursodesoxycholic acid, Chenodesoxycholic acid; Mytatrienediol, Moxestrol, Ethynylestradiol, Estradiol, Mestranol; methyl (20R)-6-alpha,

9alpha-difluoro-11beta-hydroxy-16alpha, 17alpha propyl methylene dioxyandrosta-1,4-dien-3-one-17beta-carboxylate.

5. Compounds according to claims 1-4, wherein when B is the residue of a corticosteroid, R"= IB with t = 1 and t1 = 0; preferably in the formula of the linking group L na = nb = n'b = 1; n'a = n''b = n'''b = n''a = 0; R_4 = R_5 = H; or n'b = n"b = 1 and all the other na, nb, n'a, n'''b, n''a are equal to zero.

6. Compounds according to claims 1-4, wherein when B is the residue of a biliary acid, R" = IC with t1 = 1; preferably in the formula of the linking group L na = n'b = 1, n'a = 2, n''b = n'''b = n''a = nb = 0, R_4 = CH_3, R_5 = $R_{4''}$ = $R_{5''}$ = H.

7. Compounds according to claims 1-4, wherein when B is the residue of an estrogen

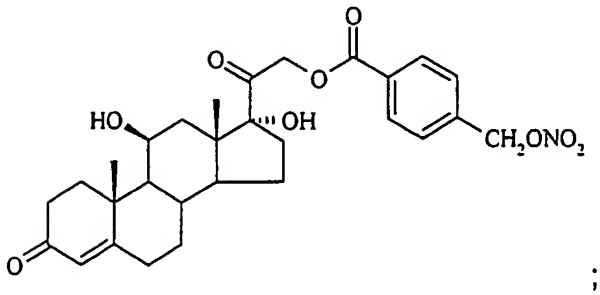
- R" = IC wherein t1 = 0 and in the formula of the linking group L nb = n'b =1; na = n'a = n''b = n'''b = n''a = 0, the other substituent of the carbon atom in position 17 is preferably H or ethynyl, and in position 3 one of the substituents is optionally the -R"-X_1-NO_2 group (R" as above defined);

or

- in position 3 the -R"-X_1-NO_2 group is present, R" being as above when B is the residue of an estrogen, then the substituents of the carbon atom in position 17 in formula (IA) of B are the following:
  - R" = -O-, wherein the oxygen free valence is saturated with H;
  - H is substituted with a group different from OH.

8. Compounds according to claims 1-7, selected from the following:

Hydrocortisone 21-(4'-nitrooxymethyl) benzoate



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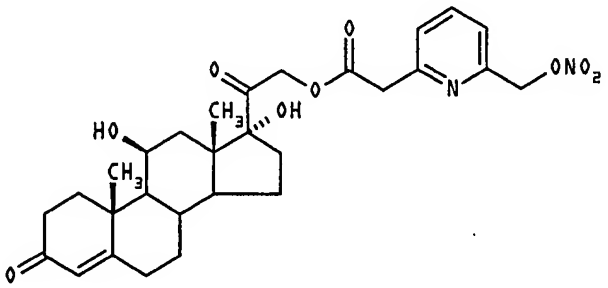
Hydrocortisone-21-[2-[6-(nitrooxymethyl)-2-pyridinyl] acetate]



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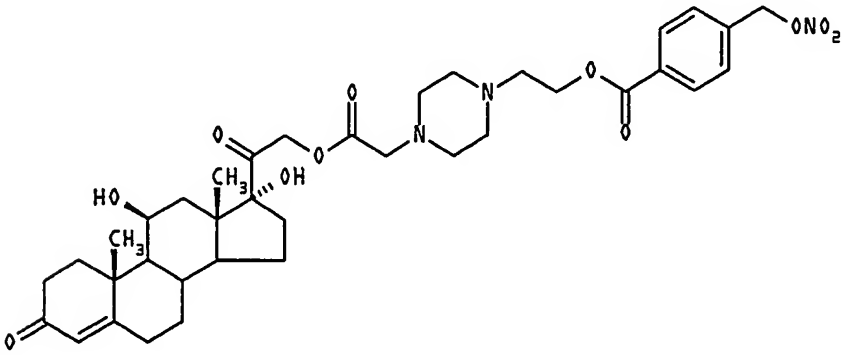
Hydrocortisone-21[2-[4-[2-[4-(nitrooxymethyl)benzoyloxy] ethyl] 1-piperazinyl]acetate]



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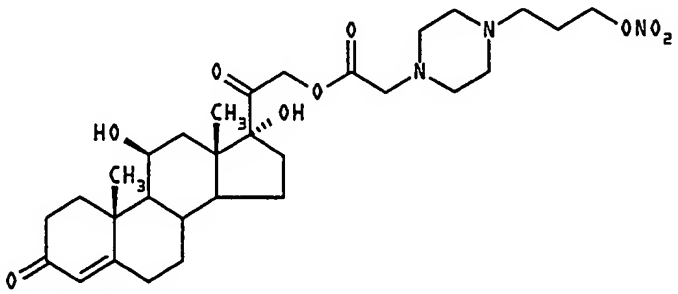
Hydrocortisone-21-[2-[4-[3-(nitrooxy)propyl]-1-piperazinyl] acetate]



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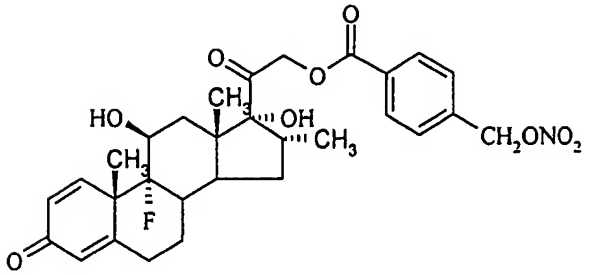
Dexamethasone 21-(4'-nitrooxymethyl)benzoate



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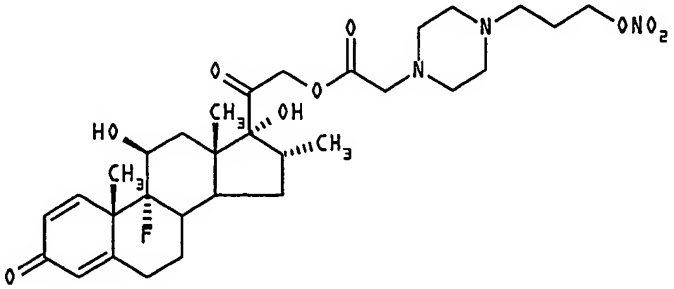
Dexamethasone-21-[2-[4-[3-(nitrooxy)propyl]-1-piperazinyl] acetate]



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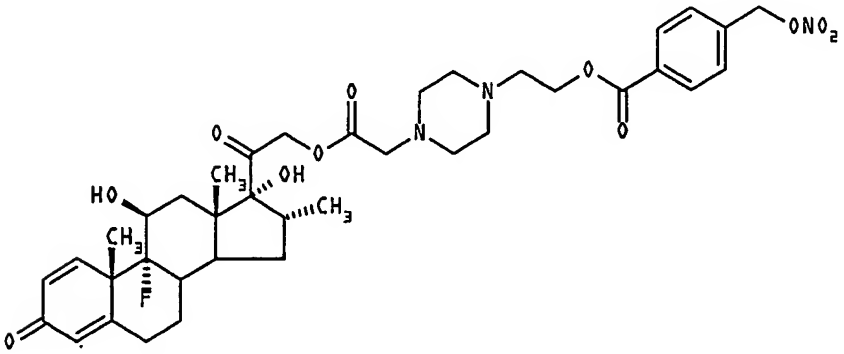
Dexamethasone-21[2-[4-[2-[4-(nitrooxymethyl)benzoyloxy] ethyl]-1-piperazinyl]acetate]



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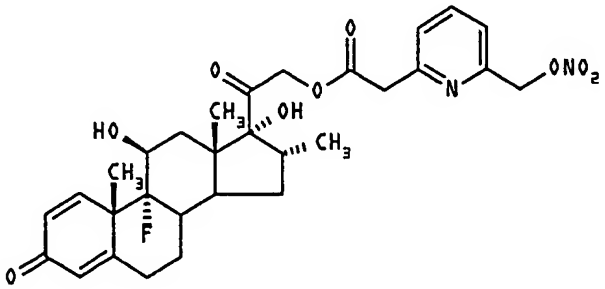
Dexamethasone-21-[2-[6-(nitrooxymethyl)-2-pyridinyl] acetate]



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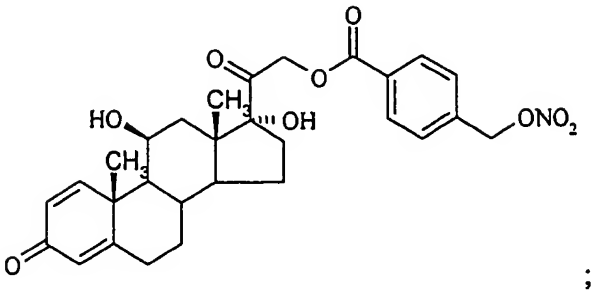
Prednisolone 21-(4'-nitrooxymethyl)benzoate



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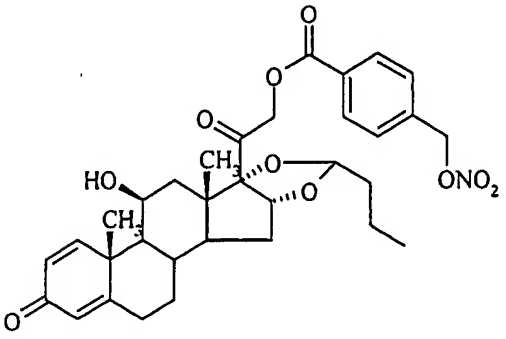
Budesonide 21-(4'-nitrooxymethyl)benzoate:



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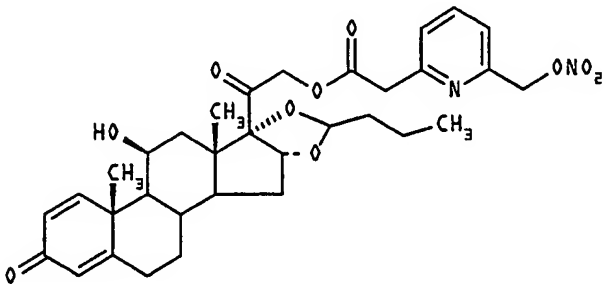
Budesonide-21-[2-[6-(nitrooxymethyl)-2-pyridinyl]acetate]



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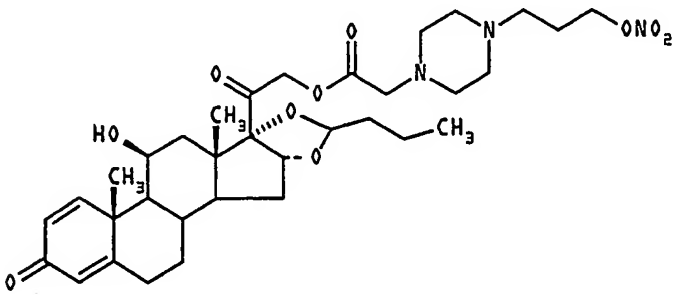
Budesonide-21-[2-[4-[3-(nitrooxy)propyl]-1-piperazinyl] acetate]



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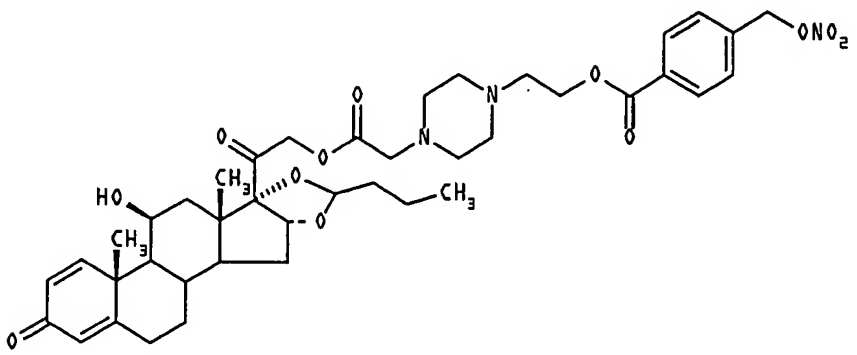
Budesonide-21[2-[4-[2-[4-nitrooxymethyl)benzoyl oxy]ethyl]-1-piperazinyl]acetate]



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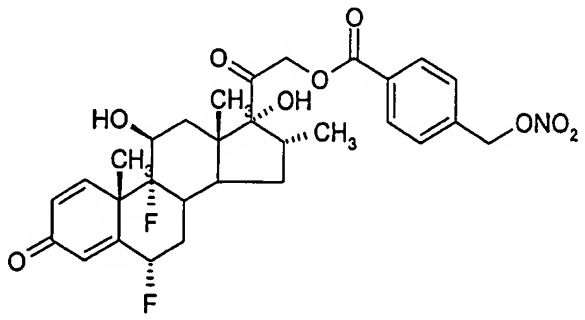
Flumethasone 21-(4'-nitrooxymethyl)benzoate:



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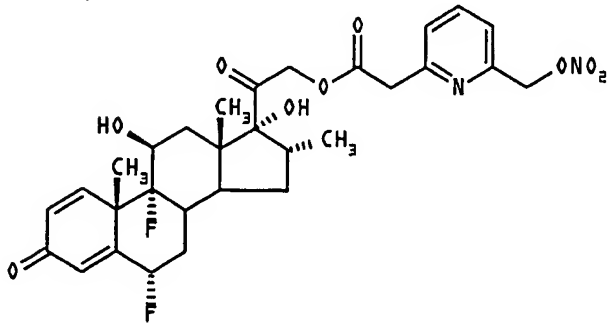
Flumethasone-21-[2-[6-(nitrooxymethyl)-2-pyridinyl]acetate]



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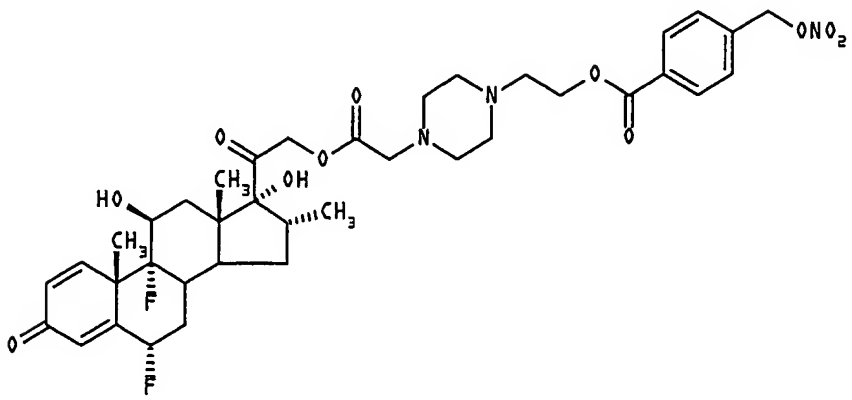
Flumethasone-21[2-[4-[2-[4-(nitrooxymethyl)benzoyloxy]-ethy]-1-piperazinyl]acetate]



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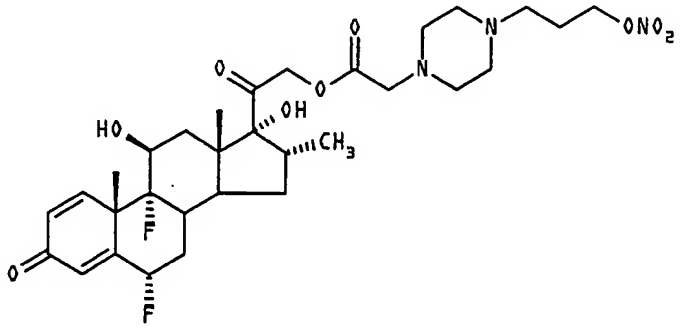
Flumethasone-21-[2-[4-[3-(nitrooxy)propyl]-1-piperazinyl] acetate]



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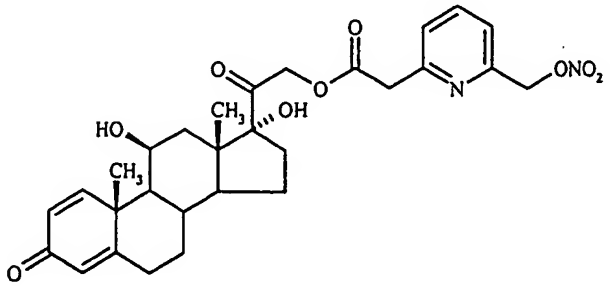
Prednisolone-21-[2-[6-(nitrooxymethyl)-2-pyridinyl] acetate]



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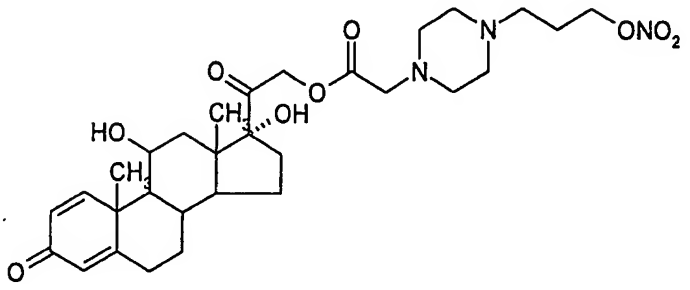
Prednisolone-21-[2-[4-(3-nitrooxy)propyl) piperazin-1-yl] acetate] and the corresponding bishydrochloride salt:



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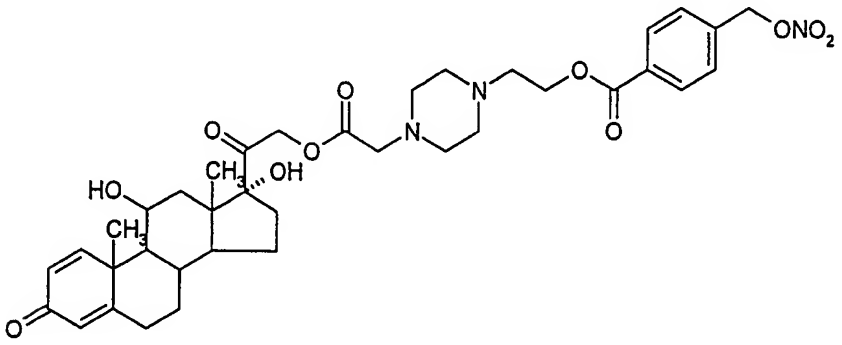
Prednisolone-21-[2-[4-[2-[(4'-nitrooxymethyl)benzoyl oxy]ethyl]piperazin-1-yl]acetate] and the corresponding bishydrochloride salt:



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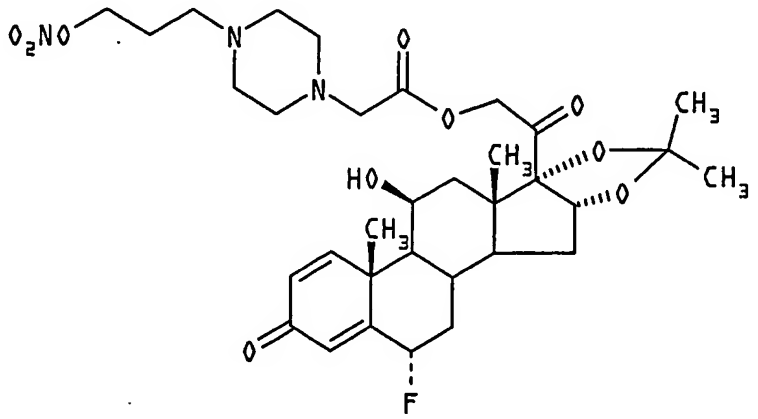
Flunisolide-21-[2-[4-[3-(nitrooxy)propyl]-1-piperazinyl] acetate]



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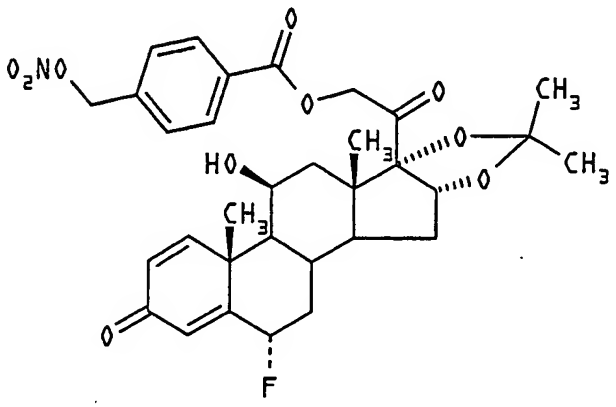
Flunisolide-21-[(4'-nitrooxymethyl)]benzoate



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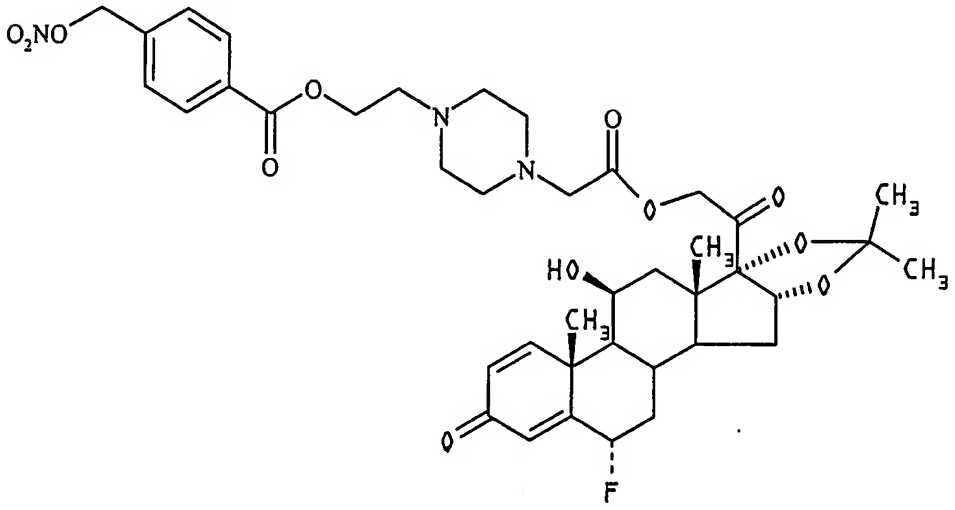
Flunisolide-21-[2-[4-[2-[4-(nitrooxymethyl)benzoyloxy] ethyl]-1-piperazinyl]acetate]



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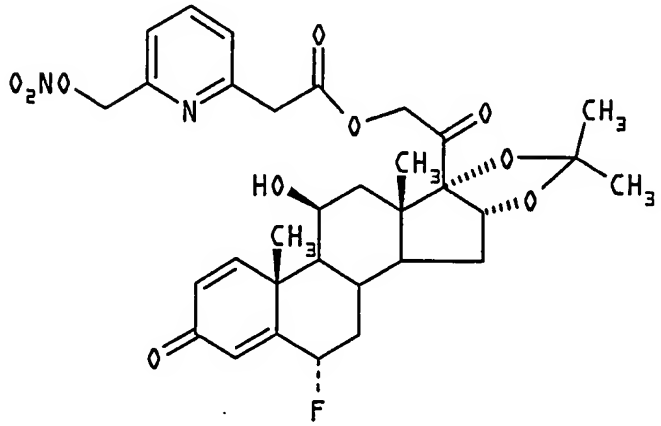
Flunisolide-21-[2-[6-(nitrooxymethyl)-2-pyridinyl] acetate]



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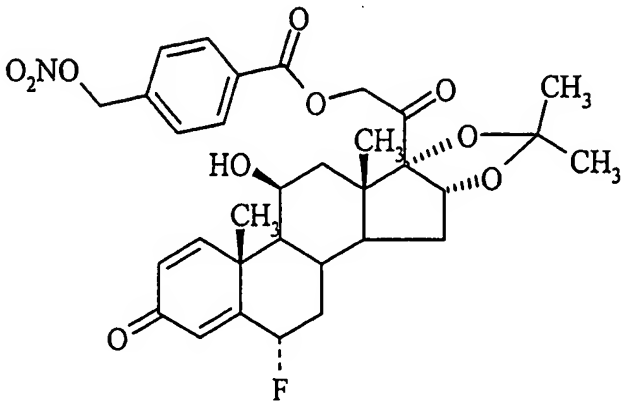
Flunisolide 21-[(4'-nitrooxymethyl)benzoate)]



9. Use of the compounds according to claims 1-8, for the preparation of medicaments.
10. Use of the compounds according to claims 1-8, as drugs having antiinflammatory activity at peripheral level.
11. Use of the compounds according to claims 1-8, for the therapy of neurodegenerative diseases on an inflammatory and traumatic basis of the nervous system.
12. Use of the compounds according to claims 1-8, as drugs having an antiarthritic activity.
13. Use of the compounds of claims 1-8, as drugs having an immunodepressive activity.
14. Use of the compounds according to claims 1-8, as drugs having an angiostatic/angiogenetic activity.
15. Use of the compounds according to claims 1-8, as drugs having an antiasthmatic activity.
16. Use of the compounds according to claims 1-8, in substitutive hormonal therapies, preferably in the post-menopause therapy.
17. Use of the compounds according to claims 1-8, in rheumatic disease therapies.
18. Use of the compounds according to claims 1-8, in renal disease therapies.
19. Use of the compounds according to claims 1-8, in bronchial disease therapies.
20. Use of the compounds according to claims 1-8, in ocular

disease therapies.

21. Use of the compounds according to claims 1-8, in dermatologic disease therapies.
22. Use of the compounds according to claims 1-8, in autoimmune disease therapies.
23. Use of the compounds according to claims 1-8, in tumoral process therapies, optionally in combination with chemotherapic and/or radiotherapic treatments.
24. Use according to claim 10, in inflammatory pathologies affecting the gastrointestinal system.
25. Use of the compounds according to claims 1-8, wherein the glucocorticoid compounds are used in respiratory pathologies characterized by broncho-obstructive events.
26. Pharmaceutical formulations comprising the compounds of claims 1-8.